WHAT IS CLAIMED IS:

- 1 1. A system comprising:
- in a vehicle suspension having an actuator, a clamp
- 3 circuit powered by movement of the actuator to generate a
- 4 passive damping characteristic of the actuator.
- 1 2. The system of claim 1 in which the actuator has a coil
- assembly, the clamp circuit including a switch for
- 3 electrically connecting the coil assembly.
- 1 3. The system of claim 2 in which the coil assembly is a
- 2 multiple-phase coil assembly, the switch electrically
- 3 connecting one or more coil ends to change the passive damping
- 4 characteristic of the actuator.
- 4. The system of claim 2 in which the switch is a silicon
- 2 device.
- 1 5. The system of claim 4 in which the clamp circuit
- 2 includes a rectifier and the switch is a single unidirectional
- 3 switch.
- 1 6. The system of claim 1 in which the actuator includes
- an armature and a stator, the movement of the actuator
- 3 generating a back electromotive force (EMF) as a result of the
- armature moving relative to the stator within the actuator,
- 5 the back EMF powering the clamp circuit.
- 7. The system of claim 6 in which the back EMF is boosted
- 2 by a supplemental circuit.
- 8. The system of claim 7 in which the supplemental
- 2 circuit comprises a bipolar Royer oscillator capable of
- 3 operating at an input voltage of approximately 0.5 volts.

- 9. The system of claim 1 in which the clamp circuit is enabled during vehicle startup and shutdown.
- 1 10. The system of claim 1 in which the clamp circuit is 2 enabled when a failure is detected.
- 1 11. The system of claim 1 in which the clamp circuit is 2 pulsed to change the passive damping characteristic of the 3 actuator.
- 1 12. A system comprising:
- in a vehicle suspension system having an actuator, an
 active clamp function provided by power-switching devices for
 the actuator; and
- a clamp circuit powered by a motion of the actuator.
- 1 13. The system of claim 12 in which the actuator has a 2 multiple-phase coil assembly, the clamp circuit including a 3 switch for electrically connecting one or more coil ends to 4 change a passive damping characteristic of the actuator.
- 1 14. The system of claim 13 in which the switch is a silicon device.
- 1 15. The system of claim 14 in which the clamp circuit 2 includes a rectifier and the switch is a single unidirectional 3 switch.
- 1 16. The system of claim 12 in which the clamp circuit is 2 enabled during a vehicle startup and shutdown.
- 1 17. The system of claim 12 in which the clamp circuit is 2 enabled when a failure is detected.

- 1 18. The system of claim 12 in which the clamp circuit is 2 pulsed to change the passive damping characteristic of the 3 actuator.
- 1 19. A vehicle suspension system comprising:
- an electronic controller adapted to produce an actuator
- 3 control signal; and
- an actuator adapted to receive electrical power from
- an external power source and to produce a controlled force in
- 6 response to the actuator control signal produced by the
- 7 electronic controller, the actuator comprising a clamp circuit
- 8 engageable by power generated within the actuator by movement
- 9 of the actuator itself to generate a passive damping
- 10 characteristic of the actuator.
- 1 20. The system of claim 19 in which the actuator has a
- 2 coil assembly, the clamp circuit including a switch for
- 3 electrically connecting the coil assembly.
- 1 21. The system of claim 20 in which the coil assembly is
- a multiple-phase coil assembly, the switch electrically
- 3 connecting one or more coil ends to change the passive damping
- 4 characteristic of the actuator.
- 1 22. The system of claim 20 in which a movement of the
- 2 actuator generates an electromotive force (EMF) to operate the
- 3 switch adapted to receive the electromotive force to maintain
- 4 electrical connection between windings.
- 1 23. The system of claim 20 in which the switch is a
- 2 silicon device.

- 1 24. The system of claim 23 in which the clamp circuit
- 2 includes a rectifier and the switch is a single unidirectional
- 3 switch.
- 1 25. The system of claim 19 in which the clamp circuit is
- 2 pulsed to change the passive damping characteristic of the
- 3 actuator.
- 1 26. A method comprising:
- in a vehicle suspension having an actuator, generating a
- 3 passive damping characteristic of the actuator by movement of
- 4 an actuator.
- 1 27. The method of claim 26 in which the actuator has a
- 2 coil assembly, the clamp circuit including a switch for
- 3 electrically connecting the coil assembly.
- 1 28. The method of claim 27 in which the coil assembly is
- a multiple-phase coil assembly, the switch electrically
- 3 connecting one or more coil ends to change the passive damping
- 4 characteristic of the actuator.
- 1 29. The method of claim 27 in which the switch is a
- 2 silicon device.
- 1 30. The method of claim 29 in which the clamp circuit
- 2 includes a rectifier and the switch is a single unidirectional
- 3 switch.
- 1 31. The method of claim 26 in which the actuator includes
- 2 an armature and a stator, the movement of the actuator
- generating a back electromotive force (EMF) as a result of the
- armature moving relative to the stator within the actuator,
- 5 which powers the clamp circuit.

- 1 32. The method of claim 31 in which the back EMF is 2 boosted by a supplemental circuit.
- 33. The method of claim 32 in which the supplemental circuit includes a bipolar Royer oscillator capable of operating at an input voltage approximately 0.5 volts.
- 1 34. The method of claim 26 in which the clamp circuit is 2 enabled during a vehicle startup and shutdown.
- 1 35. The method of claim 26 in which the clamp circuit is enabled when a failure is detected.
- 36. The method of claim 26 in which the actuator is
 powered by a power electronics module that further provides an
 active clamp to the actuator.
- 1 37. The method of claim 36 in which the active clamp and 2 the clamp circuit are simultaneously enabled when a failure is 3 detected or during a vehicle shutdown.
- 1 38. The method of claim 36 in which the active clamp is 2 enabled and the clamp circuit is disabled sequentially during 3 a vehicle startup.
- 1 39. The method of claim 36 in which the clamp circuit and 2 the active clamp are sequentially disabled when switching back 3 from failure to normal operation mode.
- 1 40. The method of claim 36 in which a clamp circuit 2 status signal is fed to the power electronics module to 3 inhibit the power electronics module from switching when the 4 clamp circuit is enabled.

- 1 41. The method of claim 26 in which the clamp circuit is
- 2 pulsed to change the passive damping characteristic of the
- 3 actuator.
- 1 42. A system comprising:
- in a vehicle suspension system having an actuator, an
- active clamp function provided by power-switching devices for
- 4 the actuator; and
- a clamp circuit powered by a power source.
- 1 43. The system of claim 42 in which the actuator includes
- a multiple-phase coil assembly, the clamp circuit comprising a
- 3 switch for electrically connecting one or more coil ends to
- 4 change a passive damping characteristic of the actuator.
- 1 44. The system of claim 43 in which the power source is a
- 2 battery.
- 1 45. The system of claim 43 in which the power source is a
- 2 large valued capacitor.
- 1 46. The system of claim 42 in which the clamp circuit is
- 2 pulsed to change a passive damping characteristic of the
- 3 actuator.
- 1 47. A system comprising:
- an actuator including a clamp circuit, the clamp circuit
- 3 powered by movement of the actuator to clamp a coil assembly
- 4 of the actuator.
- 1 48. The system of claim 47 in which the clamp circuit
- 2 includes a switch for electrically connecting the coil
- 3 assembly.

- 1 49. The system of claim 48 in which the coil assembly is
- a multiple-phase coil assembly, the switch electrically
- 3 connecting one or more coils to change a damping
- 4 characteristic of the actuator.
- 1 50. The system of claim 47 in which the clamp circuit is
- 2 pulsed to change a passive damping characteristic of the
- 3 actuator.
- 1 51. The system of claim 48 in which the switch is a
- 2 silicon device.
- 1 52. The system of claim 51 in which the clamp circuit
- 2 includes a rectifier and the switch is a single unidirectional
- 3 switch.
- 1 53. The system of claim 47 in which the actuator includes
- an armature and a stator, movement of the actuator generating
- 3 a back electromotive force (EMF) as a result of the armature
- 4 moving relative to the stator within the actuator, the back
- 5 EMF powering the clamp circuit.
- 1 54. The system of claim 53 in which the back EMF is
- 2 boosted by a supplemental circuit.
- 1 55. The system of claim 47 in which the actuator motor is
- 2 a linear motor.
- 1 56. The system of claim 47 in which the actuator motor is
- 2 a rotary motor.